

Listing of Claims:

This listing of claims reflects all claim amendments and replaces all prior versions, and listings, of claims in the application. Material to be inserted in amended claims is in **bold and underline**, and material to be deleted is in ~~strikeout~~ and (if the deletion is of five or fewer consecutive characters or would be difficult to see) in double brackets [[]]. In brief, claims 1-4, 7-10, 12, 17, 47-49, and 60 have been canceled, without prejudice; claims 51, 52, 56, 57, and 59 have been amended; and new claims 61-66 have been added. Applicants have canceled the indicated claims to focus prosecution on independent claim 50, and claims depending therefrom, in the interest of expediting prosecution of this application. Applicants reserve their right to pursue the canceled claims at a later time.

Claims 1-49 (Canceled)

50. (Previously Presented) A method of detecting addition or removal of a phosphate group to or from a substrate, comprising:

contacting a luminescent peptide with a binding partner that binds specifically to the peptide only if the peptide is phosphorylated, wherein the binding partner includes gallium involved in binding between the binding partner and the peptide, and wherein the peptide is a substrate for an enzyme that catalyzes addition or cleavage of a phosphate group to or from the peptide; and

measuring luminescence polarization from the luminescent peptide, wherein the amount of measured luminescence polarization can be related to the extent of binding between the luminescent peptide and the binding partner.

51. (Currently Amended) The method of claim 50 further comprising:
correlating the measured luminescence polarization with kinase activity.
52. (Currently Amended) The method of claim 50 further comprising:
correlating the measured luminescence polarization with phosphatase activity.
53. (Previously Presented) The method of claim 50, wherein the steps of
contacting and measuring are performed in a microplate well.
54. (Previously Presented) The method of claim 50, wherein the step of
measuring luminescence polarization includes illuminating the sample with polarized
light.
55. (Previously Presented) The method of claim 50 further comprising:
exposing the luminescent peptide to the enzyme, in a reaction mixture, to
catalyze phosphorylation or dephosphorylation of the peptide.
56. (Currently Amended) The method of claim 55, wherein there is at least
one phosphate group on the luminescent peptide, further comprising:
catalyzing ~~[[the]]~~ formation of unlabelled phosphorylated protein in the reaction
mixture to competitively bind to the binding partner.
57. (Currently Amended) The method of claim 55, wherein the binding partner
is capable of binding ~~[[binds]]~~ specifically to a phosphorylated protein substantially
without regard to the particular amino acid sequence of the protein.
58. (Previously Presented) The method of claim 55 further comprising:
adding a stop solution to the reaction mixture, following the step of exposing, to
stop the reaction catalyzed by the enzyme, wherein the stop solution includes a
chelator.

59. (Currently Amended) The method of claim 55 ~~[[50]]~~ further comprising:
contacting at least one of the luminescent peptide and the enzyme with a candidate modulator, prior to the step of measuring luminescence polarization.

60. (Canceled)

61. (New) The method of claim 59, wherein the step of contacting at least one of the luminescent peptide and the enzyme with a candidate modulator includes a step of contacting the enzyme with a candidate modulator before the step of exposing the luminescent peptide to the enzyme.

62. (New) The method of claim 55, wherein the step of exposing precedes the step of contacting.

63. (New) The method of claim 55, wherein the step of exposing catalyzes a reaction having an end point, and wherein the step of measuring is performed at least substantially at the end point of the reaction.

64. (New) The method of claim 55, wherein the step of exposing catalyzes a reaction having an end point, and wherein the step of measuring is performed at different times during the reaction before the end point.

65. (New) The method of claim 50, wherein the step of measuring is performed after the step of contacting without separation of bound and unbound species of the luminescent peptide.

66. (New) The method of claim 50, wherein the steps of contacting and measuring are performed a plurality of times with the luminescent peptide disposed in different wells of a microplate.